

### **ABSTRACT**

A heavy oil reforming method which reforms a heavy oil to give a fuel suitable for a gas turbine, eliminates sulfur and vanadium, i.e., harmful components, from a heavy oil, and enables almost all the hydrocarbons in the heavy oil to be used in gas turbine combustion; an apparatus therefor; and a gas turbine power generation system using the reformed heavy oil as fuel is disclosed. The method includes reacting a heavy oil with supercritical water and then with a scavenger for sulfur and vanadium to eliminate sulfur and vanadium from the heavy oil.